

REMARKS

Applicant acknowledges receipt of the Final Office Action mailed October 31, 2007.

In the Final Office Action, the Examiner rejected claims 1, 5-9, 15, 16, 18, 19, 23, 24, and 26-28 under 35 U.S.C. § 112, first paragraph; rejected claims 1, 5, 7, 23, 24, 26, and 27 under 35 U.S.C. § 103(a) as being unpatentable over *Umetani et al.* (U.S. Patent No. 5,171,348) in view of *Roffman et al.* (U.S. Patent No. 5,861,114); rejected claims 1, 23, 24, and 26-28 under 35 U.S.C. § 103(a) as being unpatentable over *Uno et al.* (U.S. Patent No. 5,008,002) in view of *Roffman*; rejected claim 6 under 35 U.S.C. § 103(a) as being unpatentable over *Umetani* in view of *Roffman*, and further in view of *Border et al.* (U.S. Patent Pub. No. 2003/0127759); and rejected claims 8, 9, 15, 16, 18, and 19 under 35 U.S.C. § 103(a) as being unpatentable over *Umetani* in view of *Roffman*, and further in view of *Yoshihiro et al.* (U.S. Patent No. 6,913,424).

By this Amendment, Applicant proposes to amend claim 1. Upon entry of this Amendment, claims 1, 2, 5-9, 11-16, 18-24, and 26-31 will remain pending, with claims 2, 11-14, 20-22, and 29-31 withdrawn from examination. Of the claims under examination, claim 1 is independent.

The originally-filed specification, claims, abstract, and drawings fully support the amendments to claim 1. No new matter has been introduced.

Applicant traverses the rejections above and respectfully requests reconsideration for at least the reasons set forth below.

I. 35 U.S.C. § 112, FIRST PARAGRAPH, REJECTION

Claims 1, 5-9, 15, 16, 18, 19, 23, 24, and 26-28 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. (*Final Office Action*, p. 2, paragraph 2). Applicant submits that the rejection of claims 1, 5-9, 15, 16, 18, 19, 23, 24, and 26-28 has been rendered moot by the amendments to claim 1. Specifically, Applicant has replaced the term “larger” with the term “not smaller,” as suggested by the Examiner. Furthermore, Applicant respectfully submits that the limitation in claim 1 reciting, *inter alia*, “the cutting step is conducted to cut the material with a cutting-in depth of 1 μ m or less,” is supported by the Applicant’s original disclosure, for example, on page 12, ll. 11-12; page 17, ll. 5-6; and page 82, line 17. Applicant therefore requests that the rejection of claims 1, 5-9, 15, 16, 18, 19, 23, 24, and 26-28 under 35 U.S.C. § 112, first paragraph, be withdrawn.

II. 35 U.S.C. § 103(a) REJECTIONS

Applicant traverses the Examiner’s rejection of claims 1, 5, 7, 23, 24, 26, and 27 under 35 U.S.C. § 103(a) as being unpatentable over *Umetani* in view of *Roffman*. Applicant respectfully submits that independent claim 1 is patentably distinguishable over *Umetani* and *Roffman* at least for the reasons described below.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), the prior art references (separately or in combination) must teach or suggest all the claim limitations. See M.P.E.P. § 2142, 8th Ed., Rev. 5 (August 2006). “[I]n formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed.” *USPTO Memorandum*

from Margaret A. Focarino, Deputy Commissioner for Patent Operations, May 3, 2007, p. 2. “[T]he analysis supporting a rejection ... should be made explicit” and it is “important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements in the manner claimed.” *Id.* (citing *KSR Int’l Co. v. Teleflex, Inc.*, No. 04-1350 (U.S. Apr. 30, 2007)).

Umetani appears to disclose a die for press-molding an optical element with high precision. The molding die includes a base material excellent in heat resistance, heat shock resistance, and strength at high temperature; an intermediate layer made of an Ni-P or Ni-B alloy thin film excellent in grinding processability and cutting processability, formed on the base material; and a surface protective layer made of a metal thin film stable both thermally and chemically at high temperature. (*Umetani*, col. 2, line 68 - col. 3, line 8).

As admitted by the Examiner, “*Umetani* does not teach cutting in to a depth of less than 1 um with a single point cutting tool.” (*Final Office Action*, p. 4, ll. 4-5).

Umetani also fails to disclose wherein the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material as a cutting point, and the cutting point of the cutting edge is fixed at the single point.

Accordingly, in order to cure the deficiencies of *Umetani*, the Examiner relies on *Roffman* and asserts that “*Roffman et al.* teach a method of cutting dies/molds for forming complex optical surfaces wherein a single point diamond lathe having submicron precision and repeatability is employed . . .” (*Final Office Action*, p. 4, ll. 5-8). Applicant respectfully disagrees.

Roffman appears to disclose a method of manufacturing complex optical designs in soft contact lenses using diamond point turning to machine contact lens blanks without the need for polishing the lens. The diamond lathes provide an accuracy of 20 nm and a resolution of 10 nm with an absolute shape accuracy that is better than 1 micron. (*Roffman*, col. 24, ll. 55-60). Moreover, *Roffman* appears to disclose using stainless steel as an insert of a die. (*Roffman*, col. 8, ll. 35-37).

Roffman, however, does not disclose any special cutting techniques. For example, *Roffman* fails to teach or suggest a method of forming a die surface onto a producing die to produce an optical element, wherein the cutting step is conducted while a cutting tool is set such that a single point of a cutting edge comes in contact with a material as a cutting point, and the cutting point of the cutting edge is fixed at the single point. Furthermore, *Roffman* fails to disclose a material having a hardness not smaller than Rockwell hardness HRA 80 or Vickers hardness Hv 1000. As illustrated in the attached Hardness Conversion Table, the hardness of stainless steel (SUS440C, SUS420, etc.) is 700 or less in Vickers hardness Hv.

As discussed in Applicant's specification, in the present invention, since the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material as a cutting point, and the cutting point of the cutting edge is fixed at the single point, the material can be cut with the same cutting characteristics of the same cutting edge. Accordingly, the die surface can be formed on the material with minimal dimensional deviation.

Accordingly, with respect to independent claim 1, *Umetani* and *Roffman* fail to teach Applicant's claimed combination, including, *inter alia*:

wherein the cutting tool has a cutting edge capable of coming in contact with the material, the cutting edge comprises a diamond and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material as a cutting point, and the cutting point of the cutting edge is fixed at the single point.

For at least the foregoing reasons, a *prima facie* case of obviousness has not been established with respect to independent claim 1. Accordingly, independent claim 1, and claims 5, 7, 23, 24, 26, and 27 which depend from claim 1, are patentable over *Umetani* and *Roffman*. Applicant therefore requests that the rejection of claims 1, 5, 7, 23, 24, 26, and 27 under 35 U.S.C. § 103(a) be withdrawn.

Applicant traverses the Examiner's rejection of claims 1, 23, 24, and 26-28 under 35 U.S.C. § 103(a) as being unpatentable over *Uno* in view of *Roffman*. Applicant respectfully submits that independent claim 1 is patentably distinguishable over *Uno* and *Roffman* at least for the reasons described below.

Uno appears to disclose a process for producing a mold using an ion plating method, including forming an i-carbon film on a mold base for obtaining a press-molded glass article. (*Uno*, Abstract).

As admitted by the Examiner, "Uno et al. do not teach how deep the cut is into the SiC film or that the cut is made with a single point cutting tool." (*Final Office Action*, p. 5, ll. 9-10). *Uno* also fails to disclose wherein the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the

material as a cutting point, and the cutting point of the cutting edge is fixed at the single point.

Accordingly, in order to cure the deficiencies of *Uno*, the Examiner relies on *Roffman* and asserts that “Roffman et al. teach a method of cutting dies/molds for forming complex optical surfaces wherein a single point diamond lathe having submicron precision and repeatability is employed . . .” (*Final Office Action*, p. 5, ll. 11-14). Applicant respectfully disagrees.

As discussed above, *Roffman* does not disclose any special cutting techniques. For example, *Roffman* fails to teach or suggest a method of forming a die surface onto a producing die to produce an optical element, wherein the cutting step is conducted while a cutting tool is set such that a single point of a cutting edge comes in contact with a material as a cutting point, and the cutting point of the cutting edge is fixed at the single point. Moreover, *Roffman* fails to disclose a material having a hardness not smaller than Rockwell hardness HRA 80 or Vickers hardness Hv 1000.

Accordingly, with respect to independent claim 1, *Uno* and *Roffman* fail to teach Applicant's claimed combination, including, *inter alia*:

wherein the cutting tool has a cutting edge capable of coming in contact with the material, the cutting edge comprises a diamond and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material as a cutting point, and the cutting point of the cutting edge is fixed at the single point.

For at least the foregoing reasons, a *prima facie* case of obviousness has not been established with respect to independent claim 1. Accordingly, independent claim 1, and claims 23, 24, and 26-28 which depend from claim 1, are patentable over *Uno*

and *Roffman*. Applicant therefore requests that the rejection of claims 1, 23, 24, and 26-28 under 35 U.S.C. § 103(a) be withdrawn.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Umetani* in view of *Roffman*, and further in view of *Border*, and claims 8, 9, 15, 16, 18, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Umetani* in view of *Roffman*, and further in view of *Yoshihiro*. The deficiencies of *Umetani* and *Roffman* are discussed above.

The Examiner relies on *Border* for allegedly disclosing that “it is known in the art to make microlens molds having diameters down to the micron sized range (paragraph [0005, 0049])” (*Final Office Action*, p. 6, ll. 5-7); and *Yoshihiro* for allegedly disclosing “controlling the cutting relative to the orientation of the diamond and controlling the rake angle . . .” (*Id.* at p. 6, ll. 19-21). Such teachings, even if present in *Border* and *Yoshihiro*, however, fail to teach or suggest, *inter alia*,

wherein the cutting tool has a cutting edge capable of coming in contact with the material, the cutting edge comprises a diamond and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material as a cutting point, and the cutting point of the cutting edge is fixed at the single point,

as required by claim 1 (emphases added).

Therefore, *Umetani*, *Roffman*, *Border*, and *Yoshihiro* fail to teach or suggest all of the limitations of claim 1, and claims 6, 8, 9, 15, 16, 18, and 19 are therefore patentable over *Umetani*, *Roffman*, *Border*, and *Yoshihiro* at least due to their dependence from

independent claim 1. Applicant therefore requests that the rejection of claims 6, 8, 9, 15, 16, 18, and 19 under 35 U.S.C. § 103(a) be withdrawn.

III. CONCLUSION

Applicant requests entry of this Amendment After Final, which places claims 1, 5-9, 15, 16, 18, 19, 23, 24, and 26-28 in condition for allowance. Applicant submits that the proposed amendments of claim 1 do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Furthermore, Applicant respectfully points out that the final action by the Examiner presented some new arguments as to the application of the art against Applicant's invention. It is respectfully submitted that the entering of the Amendment would allow the Applicant to reply to the final rejections and place the application in condition for allowance.

Finally, Applicant submits that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

In view of the foregoing remarks, Applicant submits that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant therefore requests the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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【硬度換算表】各材質の硬度換算にご利用ください

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本資料に掲載されている技術情報は一般的な特性を説明する為のもので、
これにより何らかの保証をするものではありませんので予めご了承ください。

[File No.Technical Report-002]

硬度換算表

hardness conversion table

stainless steel

Vickers hardness Hv

No	ビッカース	ロックウェル				ロックウェル スーパーフィニッシュ			ショア 硬さ	ブリネル硬さ		引張強さ 近似値	硬度例	
	HV	HRA	HRB	HRC	HRD	-			HS	HB		MPa	ステンレスの一例	
	↓	A	B	C	D	15-N	30-N	45-N	-	10mm球/3000kgf	-			
	-	60kgf	1/16in ボール 100kgf	150kgf	100kgf	15kgf	30kgf	45kgf	-	標準球	タングス テンカー バイト球	-	ビッカース HV	ロック H
1	940	85.6	-	68	76.9	93.2	84.4	75.4	98.0	-	-	-	-	
2	900	85.0	-	67	76.1	92.9	83.6	74.2	95.6	-	-	-	-	
3	865	84.5	-	66	75.4	92.5	82.8	73.3	93.4	-	-	-	-	
4	832	83.9	-	65	74.5	92.2	81.9	72.0	91.2	-	(739)	-	-	
5	800	83.4	-	64	73.8	91.8	81.1	71.0	89.0	-	(722)	-	-	
6	772	82.8	-	63	73.0	91.4	80.1	69.9	87.1	-	(705)	-	-	
7	746	82.3	-	62	72.2	91.1	79.3	68.8	85.2	-	(688)	-	-	
8	720	81.8	-	61	71.5	90.7	78.4	67.7	83.3	-	(670)	-	-	
9	697	81.2	-	60	70.7	90.2	77.5	66.6	81.5	-	(654)	-	SUS440C SL-XVI (AG)	SUS
10	674	80.7	-	59	69.9	89.8	76.6	65.5	79.7	-	(634)	-	-	
11	653	80.1	-	58	69.2	89.3	75.7	64.3	78.1	-	615	-	-	
12	633	79.6	-	57	68.5	88.9	74.8	63.2	76.4	-	595	-	-	SL (A)
13	613	79.0	-	56	67.7	88.3	73.9	62.0	74.8	-	577	-	-	
14	595	78.5	-	55	66.9	87.9	73.0	60.9	73.2	-	560	2075	-	
15	577	78.0	-	54	66.1	87.4	72.0	59.8	71.7	-	543	2015	SUS420J2 SL-A2 (AG)	
16	560	77.4	-	53	65.4	86.9	71.2	58.6	70.2	-	525	1950	-	
17	544	76.8	-	52	64.6	86.4	70.2	57.4	68.8	(500)	512	1880	-	SUS
18	528	76.3	-	51	63.8	85.9	69.4	56.1	67.3	(487)	496	1820	-	SL (A)
19	513	75.9	-	50	63.1	85.5	68.5	55.0	65.9	(475)	481	1760	-	
20	498	75.2	-	49	62.1	85.0	67.6	53.8	64.5	(464)	469	1695	-	
21	484	74.7	-	48	61.4	84.5	66.7	52.5	63.1	451	455	1635	-	
22	471	74.1	-	47	60.8	83.9	65.8	51.4	61.9	442	443	1580	-	
23	458	73.6	-	46	60.0	83.5	64.8	50.3	60.6	432	432	1530	-	
24	448	73.1	-	45	59.2	83.0	64.0	49.0	59.4	421	421	1480	SUS630 (AG)	
25	434	72.5	-	44	58.5	82.5	63.1	47.8	58.2	409	409	1435	-	
26	423	72.0	-	43	57.7	82.0	62.2	46.7	57.1	400	400	1385	SL-XVI (ST)	SUS (A)
27	412	71.5	-	42	56.9	81.5	61.3	45.5	55.9	390	390	1340	-	
28	402	70.9	-	41	56.2	80.9	60.4	44.3	54.9	381	381	1295	SL-A2 (ST)	
29	392	70.4	-	40	55.4	80.4	59.5	43.1	53.8	371	371	1250	-	SL (A)